30 Mar 82

ERRATA SHEET FOR
CORNHUSKER ARMY AMMUNITION PLANT

GEOTECHNICAL REPORT - INTERIM REPORT NO. 2

Page, Paragraph Line		
p. 1, para 1, 1.3	Comment:	Add "environmental" after "preliminary".
	Response:	No additional information needed.
p. 1, para 1, 1.4	Comment:	Delete "contamination".
	Response:	No additional information needed.
p. 1, para 1, general	Comment:	This paragraph neglects the reason why wells were installed; namely, to determine if contaminants in groundwater are migrating or have the potential to migrate beyond the boundaries of CAAP.
	Response:	The groundwater monitoring wells were installed to determine if contaminants in groundwater are migrating or have the potential to migrate beyond the boundaries of CAAP.
p. 3, para. 1, l. 1-2	Comment:	What is the O.D. of the HSA used?
	Response:	The outside diameter of the hollow stem auger used for drilling was 11 inches.
p. 3, para 1, l. 2-5	Comment:	It should be detailed that split spoon samples were both driven (using the Standard Penetration Test) and also pushed depending upon material type. Also, explain how samples have been retained.
	Response:	The soil samples are being stored at CAAP. The following samples have been delivered to Western Laboratories for analysis.

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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line

Boring No.	Sample No.	Boring No.	Sample No.
G-3	S-3	G-22	S-7
G-3	S-4	G-22	S-8
G-3	S-5	G-23	S-5
G-3	S-5	G-23	S-7
G-7	S-4	G-23	S-8
G-7	S-6	G-24	S-4
G-7	S-7	G-24	S-5
G-16	S-4	G-24	S-6
G-16	S-5	G-24	S-7
G-16	S-6	G-24	S-8
G-16	S-8	G-27	S-5
G-17	S-4	G-27	S-6
G-17	S-5	G-27	S-7
G-17	S-6	G-27	S-8
G-17	S-8	G-30	S-4
G-19	S-4	G-30	S-5
G-19	S-5	G-30	S-7
G-19	S-6	G-30	S-8
G-19	S-7	G-33	S-4
G-19	S-8	G-33	S-5
G-22	S-5	G-33	S-6
G-22	S-6	G-33	S-7
		G-33	S-8

p. 3, para 1, l. 5-7 — Comment: USATHAMA's "Minimal Requirements for Boring Logs, Drilling Procedures, and Monitor Well Installation" should be referenced here as it details the methodologies used in the field.

Response: No additional information needed.

p. 3, para 2 — Comment: No mention here is made of the water added down the hollow stem to prevent heaving. Indicate approximate amounts used per boring, source of water and conditions (depths, etc.) for use.

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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
p. 3, para 2 continued	Response:	The source of the water was well house #3. Water was introduced into the hollow stem to prevent heaving. Water was also added between the PVC pipe and the hollow stem auger in order to prevent the well casing from being pulled up with the hollow stem auger. Water was added to only 3 wells. Four gallons were added to G-13. Water was added to G-12 and G-3, however the amount is unknown.
p. 3, para 3, l. 2-6	Comment:	How were the sand, bentonite and grout emplaced (poured, tremmied, shoveled, etc.)? To what levels, or what general thicknesses of sand and bentonite were used?
	Response:	The sand was shoveled into the annulus. The bentonite was poured into the hole dry. The grout was poured from a barrel.

Well No.	Feet of Sand Added to Well	Feet of Bentonite
G-1	not recorded	5
G-2	3'	5
G-3	7'5"	5
G-4	not recorded	5
G-5	4'	5
G-6	3'	5
G-7	3'	6
G-8	1'	6
G-9	5'	5
G-10	3'	5
G-11	4'7"	5
G-12	5'1"	4'11"
G-13	4'	5

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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line

Well No.	Feet of Sand Added to Well	Feet of Bentonite
G-14	1'9"	5
G-15	4'	5
G-16	not recorded	5
G-17	not recorded	5
G-18	3'	5
G-19	5'2"	5
G-20	5'	5
G-21	0	5
G-22	1'6"	5
G-23	0	5'2"
G-24	0	5
G-25	not recorded	5
G-26	2'	5
G-27	3'	6
G-28	2'	5
G-29	3'6"	5
G-30	4'4"	5
G-31	1'	5
G-32	4'7"	5'5"
G-32	4'6"	5

p. 3, para 5, l. 3-5

Comment: Indicate the general height of the well protection avove the well riser.

Response: 0.25 - 0.40 feet

p. 5, para 1, l. 1-2

Comment: Indicate the number of the well from which water was taken to rinse the well drilling equipment.

Response: Well house #3.

p.5

Comment: A paragraph on well surveying methodology should be included as part as the well installation.

ERRATA SHEET FOR
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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
p. 5 (cont'd)	Response:	Horizontal control was established from two CAAP monuments on the southern part of the plant. A closed traverse was run with a one second transit and an electronic distance measurement device. Vertical control was established from various benchmarks within the plant boundaries. Several level loops were run in order to establish the elevation on all 31 monitoring wells.
p. 5, para 3, l. 5-8	Comment:	This paragraph fails to mention why the well casing and screen came up with the augers and how the problem was avoided (for the most part) in future installations.
	Response:	The well casing and screen came up with the augers due to soil materials wedged between the augers and the well casing. The problem was later avoided by adding water between the auger and the well casing to act as a lubricant.
p. 5, para 3, l. 10 and p. 5, para 4, l. 2	Comment:	Indicate whose decision it was to redrill G-29 and G-2, and not to grout the original wells.
	Response:	G-29 produced a low yield during development. Bob Sneed of Southwestern Laboratory (Geologist) decided to redrill the well in order to achieve a higher yield. Peter Wirth of USATHAMA made the decision to redrill G-2. Joseph Higgens of Mason & Hanger-Silas Mason Company, Inc. requested that the original wells not be grouted.

ERRATA SHEET FOR
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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
p. 5, para 4, l. 1-2	Comment:	a. Was there anything on the log for the original well G-2 which suggests it is located in an anomalous area - i.e., more silty or clayey? b. What can this low yield be attributed to?
	Response:	a. No b. Grout around the screen
p. 5, para 5, l.4	Comment:	Add "USATHAMA" after "into the" and capitalize "Data and Management System".
	Response:	No additional information needed.
p. 6, bottom	Comment:	The subscripts are not keyed into the table.
	Response:	Delete footnotes.
p. 7, Northing Column	Comment:	Check the northing coordinate for G1 - there seems to be a digit missing.
	Response:	A digit was missing. Northing coordinate for G1 should read 4532218.
p, 9, 10	Comment:	The legend and shadings on these two pages are illegible. Attached legible copies plus the reference for the data are provided for assistance. Unfortunately, references for Figures 3-3 and 3-4 cannot be identified.
	Response:	Attached

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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
p. 10, lower cross-section	Comment:	The location of CHAAP is incorrect on this cross-section. CHAAP is actually entirely within T. 11 N. as shown on the attached diagram which was distributed at the pre-bid conference.
	Response:	Corrected (See Attachment)
p. 19, para 1, 1.3	Comment:	Insert "and" after "north-south".
	Response:	No additional information needed.
p. 19, para 1, l. 10	Comment:	Add "surface" after "general" for clarity.
	Response:	No additional information needed.
p. 19, para 2, l. 22-25	Comment:	It should be noted that the soils series descriptions <u>were included</u> in Chapter 3.
	Response:	No additional information needed.
p. 21	Comment:	a. This diagram is misleading by showing the water level above the bentonite seal (i.e., showing a piezometer and not an observation well). Although the static water level is opposite the screen at 6 wells due to water level changes after the screen was set, it was planned to set the top of the screen at the first encountered water level making the wells installed as observation wells. b. Also, static water levels should all be taken on one day, not over a period of <u>six</u> days as was done, to be truly accurate.

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Page, Paragraph, Line		
p. 21 (Cont'd)	Response:	a. The water level symbol was positioned for legibility purposes, not to indicate the desired or even typical construction. b. Significant water level fluctuations do not normally occur in such a short period of time except where influenced by erractic pumping nearby.
p. 22, title	Comment:	Add "SURFACE" prior to "SOILS MAP" for clarity as all unindurated materials in text are referred to as "soils". Also, this diagram would be greatly enhanced by putting the well numbers on it and by dashing boundaries which are inferred.
	Response:	See Attachment.
p. 19, bottom line and p. 24, top line	Comment:	This sentence is poorly worded. If there is clay to 13 feet, how can anything be overlying it?
	Response:	pg. 19 bottom line, "olive-grey clay from 1 to 13 feet ..."
p. 24, para 2, 1.3 p. 24, para 3, 1.3 p. 27, para 2, 1.4 p. 31, para 1, 1.4	Comment:	"Horizonation is used on all these lines, however, there is no such word.
	Response:	"Horizonation includes the proanisotropic processes and conditions by which initial materials are differentiated into soil profiles with many horizons." Buol, S.W., F.D. Hole, and R. J. McCracken "Soil Genesis and Classification," Iowa State University Press, Ames pg 91, 1973

ERRATA SHEET FOR
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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
p. 27, para 3, 1.2	Comment:	Add a hyphen after "fine".
	Response:	No additional information needed.
p. 31, para 1, 1. 3-4	Comment:	What changes, if any, are anticipated below 40.5 feet in the aquifer from those characteristics exhibited in the aquifer that's been drilled into?
	Response:	Grain size may increase with depth as described elsewhere in the report.
p. 37, last line	Comment:	Check the spelling of "frozen" in the "Comments" column.
	Response:	Delete the letter "m".
p. 47, para 2, 1.2	Comment:	Add "USATHAMA" before "Data".
	Response:	No additional information needed.
p. 47, para. 3, 1. 10-11	Comment:	Comparing the evaporation rate with the precipitation rate should also shed light on the infiltration rate for this area.
	Response:	See ref., page 52.
p. 47, para 4	Comment:	Were water levels obtained in any of the deep supply wells to aid in this interpretation?
	Response:	No.
p. 50, para 3, and p. 51-55	Comment:	In the discussion on contaminant migration velocities, no mention was made of several important factors: (1) whether or not the pollutants travel as fast as groundwater, (2) effects of water level rises and drops, (3) effects

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(Continued)

Page, Paragraph, Line		
p. 50, para 3, and p. 51-55 cont'd		of aquifer pumping and off-boundary usage, (4) methods of pollutant disposal, and (5) possible differences between the horizontal and vertical hydraulic conductivities.
	Response:	The aspects of contaminant migration described above will be addressed in the Contamination Analysis Report (Interim Report No. 3) and/or the Final Report for this project.
p. 51, last column	Comment:	Add "Horizontal Migration" to the beginning of the column title.
	Response:	See attached corrected table.
p. 51, bottom, Darcy Equation	Comment:	Define the parameters V, K, i and n. Is V an average value? Is n the "effective" porosity or regular porosity?
	Response:	V = velocity, defined as the trasnport velocity or macroscopic flow velocity. K = coefficient of permeability i = hydraulic gradient n = effective porosity (an estimate and not based on any measurements)
p. 53, para 2, l. 10	Comment:	Check the spelling of "theoretical".
	Response:	Theoretical is the correct spelling.
Soil Boring Logs	Comment:	Check spelling on form of "Classification" for "Classification of Materials column. Also, many lines separating USCS classifications in the "Legend" column are missing as well as a few USCS classifications themselves.

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GEOTECHNICAL REPORT - INTERIM REPORT NO. 2
(Continued)

Page, Paragraph, Line		
Soil Borings Logs (Cont'd)	Response:	The correct spelling is shown above. Transition lines and USCS classifications have been added to the attached boring logs.

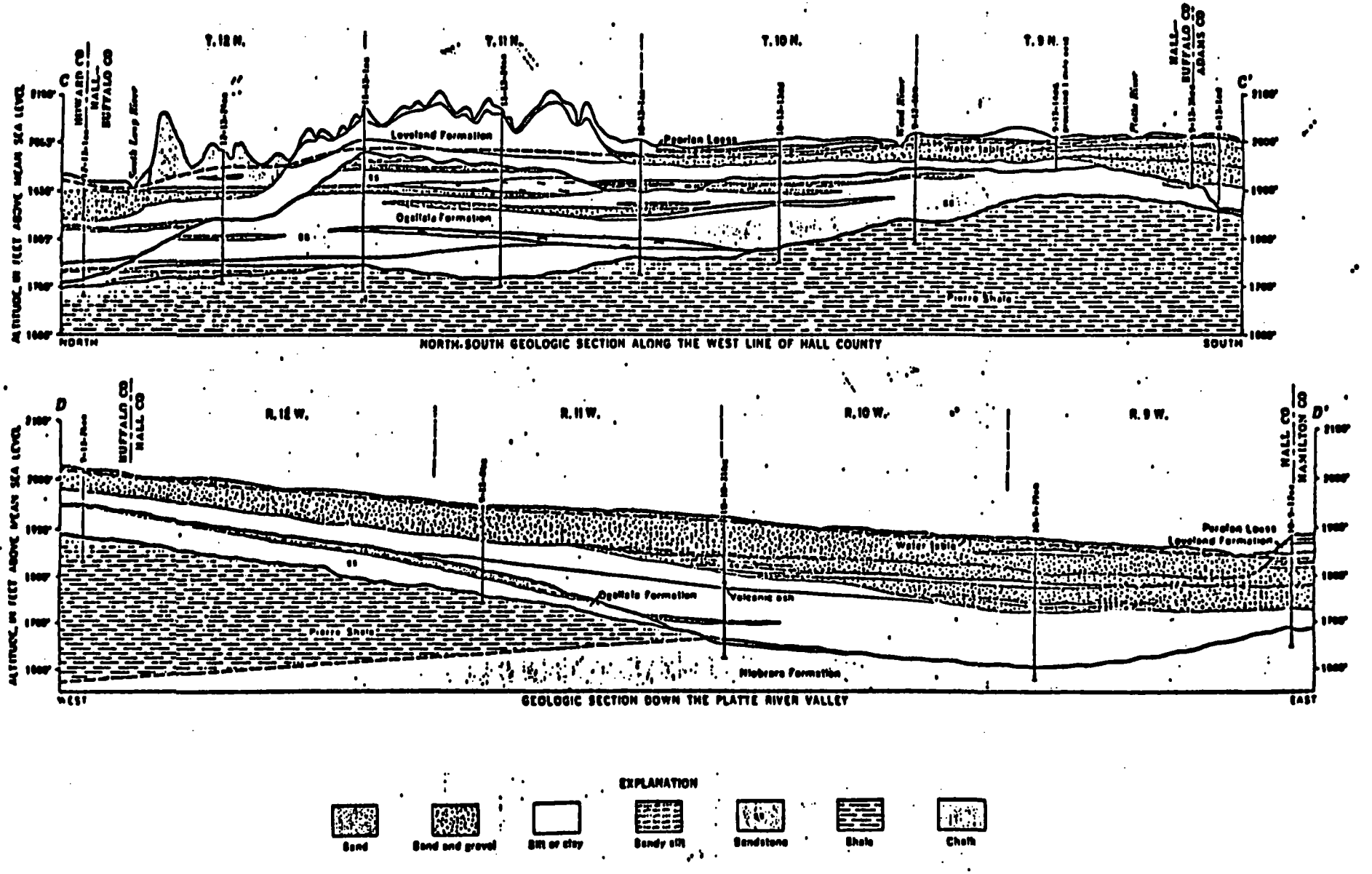


Figure 3-i Geologic Sections Across Hall County, Nebraska (Sheet 1 of 2)

Reference: Keech, C.F. and V.H. Dreeszen, 1964, Availability of ground water in Hall County, Nebraska: U.S.G.S. Hydrologic Investigations Atlas HA - 131.

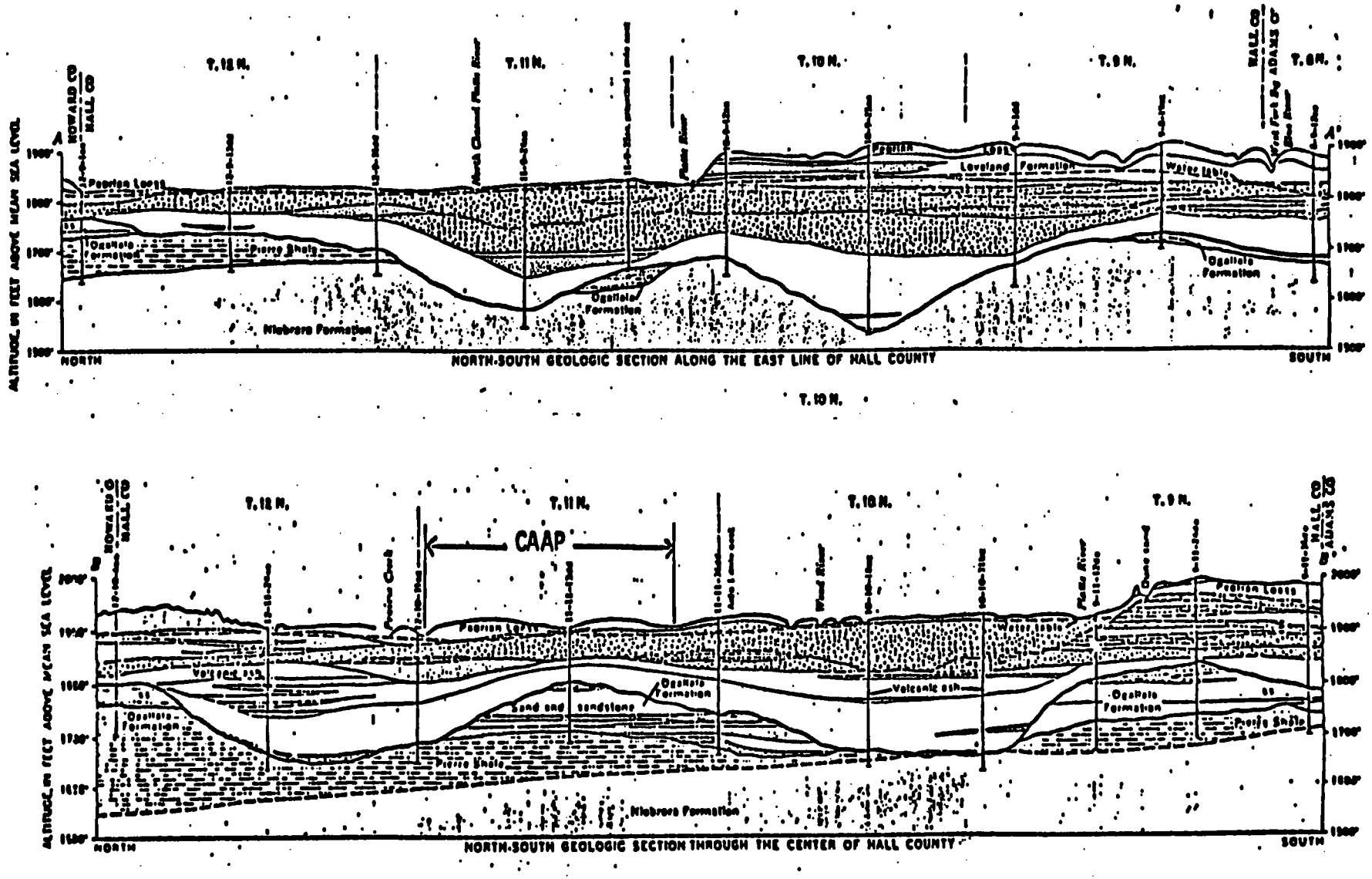
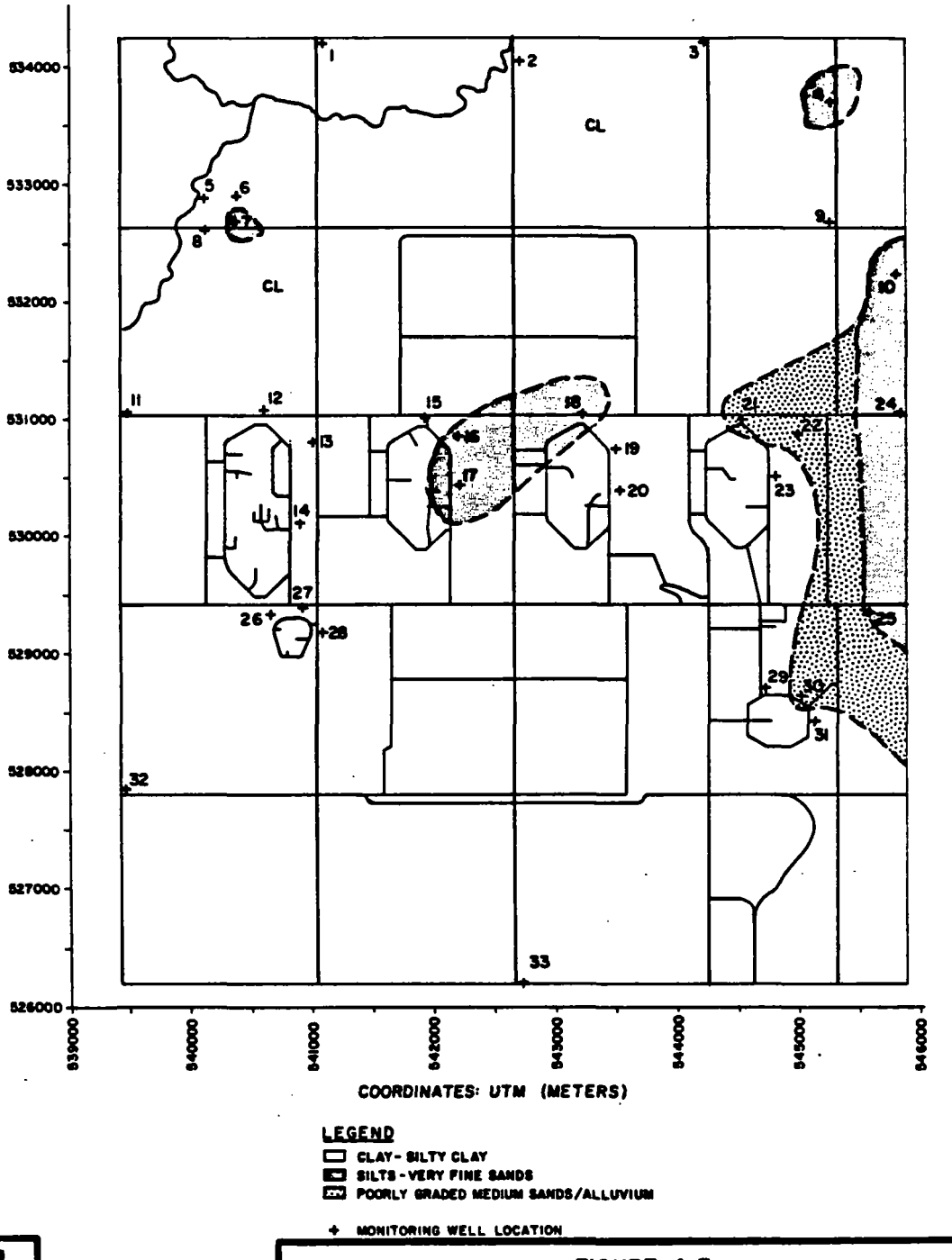


Figure 3-1. Geologic Sections Across Hall County, Nebraska (Sheet 2 of 2)



EEI

1748

FIGURE 4-3

SURFACE SOILS MAP
UNIFIED SYSTEM

TABLE 5-2

GROUNDWATER FLOW VELOCITIES SUMMARY

Soil Sampling Site	Water Table Gradient (i)	Maximum Probable Velocity[1] (ft/day)	Minimum Probable Velocity[2] (ft/day)	Migration Time (yrs)	Horizontal Migration Distance[3] Maximum (ft)	Horizontal Migration Distance[3] Minimum (ft)
S1	0.0015	3.01	0.11	40	44,019	1606
S2	0.0015	3.01	0.11	16	17,606	642
S3	0.0015	3.01	0.11	16	17,606	642
S4	0.0015	3.01	0.11	40	44,019	1606
S5	0.00071	1.43	0.05	15	7,816	274
S6	0.00071	1.43	0.05	40	20,840	730
S7	0.0017	3.42	0.12	40	49,973	1752
S8	0.0017	3.42	0.12	16	19,989	701
S9	0.0016	3.22	0.11	14	16,448	562
S10	0.0016	3.22	0.11	16	18,798	642
S11	0.0016	3.22	0.11	15	17,624	602
S12	0.0016	3.22	0.11	40	46,996	1606
S13	0.0012	2.42	0.087	40	35,300	1270
S14	0.0012	2.42	0.087	29	15,420	921
S15	0.0012	2.42	0.087	29	15,420	921
Amm. N. Area	0.00102	2.05	0.074	40	30,023	1079
Burn. Ground	0.00084	1.70	0.061	40	24,724	890

[1] $K = 670$ ft/day $= 1.6 \times 10^{-1}$ cm/sec

[2] $K = 24$ ft/day $= 8.5 \times 10^{-3}$ cm/sec } and $V = \frac{Ki}{n}$ where $n = 0.35$ (sand)

[3] until 1982

APPENDIX A

SOIL BORING LOGS

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-1

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-9-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-9-81

DATE BORING COMPLETED 11-9-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Dark Brown Clayey Top Soil, w/ organic	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Olive Gray highly plastic clay, stiff moist, no free water 5/2-5Y Fluvial			All samples taken W/split spoon
		CH			4.0	All samples in Plastic bags
	5			12/18	S-2	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0	Protective casing not set at this tim time-not available Center plug of aug. auger not used from 20 to 35 ft. 80 gals water used as follows: 20-20 gal. 25-20 gal. 30-20 gal. 35-20 gal.
	10				S.3 P	
					10.5	Grant mixed and pumped into hole Hole cased at 19.5 ft.
			Sharp		14.0	
			Dark olive gray clayey loose silt, w/10-15% clay moist no free water.			Free water encountered at 18.0 ft.
	15	SM	3/2-5Y	12/18	S-4	
		ML	Fluvial		15.5	Free water observed in sample S-5
			Sharp			
		SP	Dark Gray find sand free water loose 4/1 5Y			
					19.0	
	20		Fluvial	18/18	S-5 P	

20.5

PROJECT CAAP

BORING NO. G-1

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		SP	Becoming medium to coarse in size w/1-2% pea gravel at 23.0 ft.		24.0	
	25			18/18	S-6	D
					25.5	
			Becoming coarse in size w/1-2% pea gravel at 28.0 ft.		29.0	
	30	SP		18/18	S-7	D
					30.5	
					34.0	
	35			12/18	S-8	D
			T.O. 35.5 ft.		35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-1

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G-2

DRILLING CONTRACTOR SWI. FIRST ENCOUNTERED WATER DEPTH 13.0

DRILLER S NAME Kraft DATE ENCOUNTERED 11-12-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-12-81 DATE BORING COMPLETED 11-12-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
	0	OH	Dark Grayish Brown clayey top soil with organic (Sharp)	12/12	S-1		0 sample S-1 Taken from auger
		CL	Light yellowish brown low plasticity, silty stiff clay, moisture free water, highly jointed 6/4-2.5Y Fluvial		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
							All samples taken W/split spoon
					4.0		
	5			18/18	S-2	P	All samples in Plastic bags
							Method of taking samples Pushed - P Driven w/ - D (40# hammer
					5.5		
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing was not placed at this time because it was not available.
	10		Sharp	12/18	S.3	P	
		ML	Light yellowish brown firm silty, no apparent bedding, moist no free water Fluvial 6/4-2.5Y		0.5		Center plug of auger was not used from 25 to 30 ft.
							20 gals. water used to advance auger from 25 to 30 ft.
					14.0		P.V.C. fell about 1 ft. when augers were pulled.
			Sharp				
	15	SW	Light yellowish brown fine sand, loose w/free water Fluvial 6/4-2.5Y	7/18	S-4	P	Cement hand mixed and poured into hole because we only had to grout 5.25 ft.
					15.5		
			Augers started drill very easy at 13.0 ft. indicating ground water Also free water observed in sample S-4				Hole caved to 24 ft.
					19.0		
	20			12/18	S-5	P	

20.5

PROJECT CAAP BORING G-2

PROJECT CAAP

BORING NO. G-2

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		SW	Become a light gray, loos3, fine to coarse sand at 19.0 ft. w/1-2% pea gravel M7/-2.5Y Fluvial			
			Grading to a very fine light gray loose sand w/a few gray loose silt seam 3 to 4 inches thick between 20 & 20 Ft N7/-2.5Y Fluvial		24.0	
	25			18/18	S-6	P
					25.5	
					29.0	
	30			18/1[illegible]	S-7	
			T.D. 30.5		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-2

PROJECT CAAP

DRILLING CONTRACTOR SWL

DRILLER S NAME Kraft

GEOLOGIST NAME Sneed

RIG MAKE/ MODEL CME-55

DATE BORING STARTED 11-12-81

BORING NO. G- 3

FIRST ENCOUNTERED WATER DEPTH 13.0

DATE ENCOUNTERED 11-12-81

GROUND ELEVATION

GEOLOGIST S SIGNATURE

DATE BORING COMPLETED 11-12-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark Brown clayey Top Soil with organic	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Light yellowish brown stiff, low plasiticity, silty clay with iron stains 6/4-2.5Y Moist, no free water Fluvial				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2		Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Sharp				Protective casing was not placed at this time because it was not available.
		SP	Light yellowish brown, loose very fine sand moist, no free water		9.0		
	10		Fluvial 6/4-2.5Y	18/18	S-3	P	Center plug of augers was not used from 15 to 30 ft.
					10.5		80 gals of water was used as follows: 15-20 gal. 20-20-gal. 25-20 gal. 30-20 gal.
			W/1-2% gravel				
				6/18	14.0		
			Free water encountered at 13.0 ft. Cuttings from auger were wet and free was in sample S-4				P.V.C. dropped about 1" where augers were pulled.
	15			6/18	S-4	P	
					15.5		Grout was hand mixed and poured because we only had 4' to grout
					19.0		Hole caved to 16.5 ft.
	20			6/18	S-5	D	

20.5

PROJECT CAAP BORING G-

PROJECT CAAP

BORING NO. G-3

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
		SW	Gray, loose, fine to coarse sand w/ a few sand gray clay seams 4 to 5 inch thick	18/18	S-6	D
	25		N5/-2.5Y		25.5	
			Fluvial		29.0	
	30				S-7	
			T.D. 30.5		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G- 3

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G- 4

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-9-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-9-81

DATE BORING COMPLETED 11-9-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown clayey top soil w/organics sharp moist	12/12	S-1		0 sample S-1 Taken from auger
					1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		ML	Light yellowish brown clayey silt loose 10-15% clay Dry 6/4-2.5Y Fluvial				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/12	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Sharp				
		SP	Light yellowish brown loose find sand w/1-2% pea gravel moist no free water 6/4-2.5Y Fluvial		9.0		Protective casing not placed at this time because it was not available.
	10			12/18	S.3	P	
					10.5		P.V.C. dropped about 1 ft. when augers were pulled.
					14.0		Center plug not used from 20 to 35 feet
	15			12/18	S-4	P	80 gals. water used as follows: 20-20 gal. 25-20 gal. 30-20 gal. 35-20 gal.
			Free water encountered at 18.0 ft.		15.5		Hole caved at 19.5 ft.
			Free water observed in sample S-5				
					19.0		
	20				S-5	P	
					20.5		

PROJECT CAAP

BORING G- 4

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-4

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Becoming medium to coarse in size at 25.0	4/16	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35		TD 35.5	No Sample	S-8	D
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-4

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G- 5

DRILLING CONTRACTOR SWL FIRST ENCOUNTERED WATER DEPTH 35

DRILLER S NAME Kraft DATE ENCOUNTERED 11-10-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-10-81 DATE BORING COMPLETED 11-10-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black to dark gray clayey top soil with organics	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Dark grayish brown stiff silty clay highly jointed 20-25% silt moisture free water 4/2-2.5Y Fluvial Low plasticity			All samples taken W/split spoon
					4.0	
	5			18/18	S-2	P All samples in Plastic bags
						Method of taking samples Pushed - P Driven w/ - D (40#hammer
			Light yellowish brown stiff silty clay, highly jointed 20-25% silt moist, no free water 6/4-2.5Y Fluvial Low Plasticity		5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
						Protective casing not placed at this time. P.V.C. dropped about 1 ft. when augers were pulled.
					9.0	
	10			18/18	S-3	P Center plug at augers not used 15 to 30 feet.
					10.5	80 gals water used as follows: 15-20 gal. 20-20 gal. 25-20 gal. 30-20 gal.
					14.0	Grout hand mixed and poured in hole because it is not available
	15	ML	Dark gray, clayey loose silt, 15-20% clay w/½" fine sand seam every 1 ft. N41-7.5YR Fluvial Free water encountered at 13.5 ft.	18/18	S-4	P Hole caved in at 16.0 ft.
					15.5	Method of obtaineng sample
		SP	Gray fine loose sand with 1 to 2% pea gravel N 6/0 7.5 YR Fluvial			Free water observed in sample S-4
					19.0	D
	20			12/18	S-5	
					20.5	

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-5

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 13.5

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			18/18	S-6	D
					25.5	
					29.0	
	30			No Sample	S-7	D
			T.D. 30.5		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-5

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-6

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-10-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-10-81

DATE BORING COMPLETED 11-10-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black to very dark gray clayey top soil w/ organics	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Light yellowish brown silt clay, stiff, highly jointed moist no free water 6/4-2.5Y Fluvial			All samples taken W/split spoon
					4.0	All samples in Plastic bags
	5			18/18	S-2	Method of taking samples Pushed - P Driven w/ - D (40#hammer
			Sharp		5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
	6		Dark olive gray soft, clayey silt, moist, no free water 3/2 - 5Y			
		SM ML	Fluvial		9.0	
	10			18/18	S.3	Note- Could get P.V.C. pipe to go out the bottom HSA due to clay plug. Tried to pull P. V.C. and the screen pulled off Back filled hole with sand to 13.0 feet. Grouted hole from 13.0 feet to 2.0 ft. Redrilled 10 ft. to the south.
					10.5	
	13		Gray loose find to medium sand w/free water N5/-2.5Y Fluvial W/1-2% pea gravel			
		SP			14.0	
	15			12/18	S-4	
					15.5	
					19.0	
	20			12/18	S-5	
					20.5	

PROJECT CAAP

BORING NO. G-6

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
				18/18	S-6	
	25				25.5	
					29.0	
	30		Sharp	18/18	S-7	
		CL	Gray silty, stiff clay w/10% silt N3/-2.5Y			
			Fluvial		30.5	
			T.D.30.5			
					34.0	
					S-8	
	35				35.5	
					39.0	
	40					
					40.5	

PROJECT CAAP

BORING G-6

BORING LOG

PROJECT CAAP

BORING NO. G-7

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 13.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-11-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED ~~11-11-81~~

DATE BORING COMPLETED 11-11-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black to dark gray top soil with organic moist	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
		ML	Light yellowish brown loose clayey silt w/20-25 clay moist, no free water 6/4-2.5Y Fluvial			All samples taken W/split spoon
					4.0	All samples in Plastic bags
	5			18/18	S-2	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0	Grout was hand mixed and poured into the hole rather than pumped because we only had 4.5 feet to grout.
			Becoming less clayey at 8.0, 10-15% clay	18/18	S-3	
	10				10.5	Protective casing was not placed at this time It has not arrived on site as yet.
		SP	Gray loose fine sand, w/free water N5/-2.5Y Fluvial		14.0	Hole caved to 16.5 ft.
				6/18	S-4	
	15		Free water encountered at 13.0 ft. This water level was noted by the engineer of drilling, indicating sand.		15.5	
					19.0	Drove split spoon 18" w/140# hammer at S-5
	20			No sample	S-5	

20.5

PROJECT CAAP

BORING NO. G-7

DRILLING CONTRACTOR SWI.

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	A total of 80.0 gallons of water was used to advance augers starting at 14.0 ft. 20 gals. - 14' 20 gals. - 19' 20 gals. - 24' 20 gals - 29'
					S-6	
	25	SP	Becoming coarse in size at 27 to 28 feet w/1-2" pea gravel.	12/18		
					25.5	Drove split spoon 18" w/140# hammer at S-6
					29.0	
	30				S-7	Drove split spoon 18" w/14# hammer at S-7
			TD 30.5		30.5	
					34.0	
					S-8	
	35				35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G-7

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G-8

DRILLING CONTRACTOR SWI. FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft DATE ENCOUNTERED 11-11-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-11-81 DATE BORING COMPLETED 11-11-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	0	OH	Black to dark gray clayey top soil w/ organics	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Light yellowish brown silty clay, highly jointed with low plasticity, stiff moist no free water silt 15 to 20% Fluvial origin	18/18	4.0	All samples taken W/split spoon
	5				S-2	All samples in Plastic bags
					5.5	Method of taking samples Pushed - P Driven w/ - D (40#hammer
						Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0	Center plug was used to a depth of From this point to the botton of the hole the center plug was not used.
	10			18/18	S-3	
					10.5	P.V.C. was placed inside H.S.A. When auger pulled out P.V.C. fell about 1 ft. because of sand inside of augers.
					14.0	
	15		Sharp	18/18	S-4	Grout hand mixed and poured in hole because we only had 8 ft. to grout.
		SM	Gray loose fine sand, w/free water H5-2.5Y Fluvial Free was observed in the fine sand in lower part of sample S-4		15.5	Protective casing not placed at this time.
						Hole caved to 16.5 ft.
					19.0	
	20			9/18	S-5	
					20.5	

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-8

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	100 gallons of water used to advance auger as follows: 20 gal. - 15 ft. 20 gal. - 20 ft. 20 gal. - 25 ft. 20 gal. - 30 ft. 20 gal. - 35 ft.
	25	ML	Dark gray loose clayey silt w/ 10-15% silt N 41-2.5Y Fluvial	18/18	S-6	Drove split spoon 18" w/140# hammer at S-6
		SP	Light gray medium to coarse loose sand w/ 1-2% pea gravel N 7/- 2.5 Y Fluvial		25.5 29.0	
	30			No sample	S-7	Drove split spoon 18" w/140# hammer at S-7
					30.5	Had to advance augers to 35.5 ft. let top of screen down to 15 ft. due to sand in augers and caving sand.
					34.0	
	35	CL	Dark gray silty clay low plasticity, 15 to 20% silt Fluvial	18/18	S-8	Drove split spoon 18" w/140# hammer at S-8
			T.D. 35.5'		35.5	
	40				39.0	

40.5

PROJECT CAAP BORING G-

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G-9

DRILLING CONTRACTOR SWI FIRST ENCOUNTERED WATER DEPTH 14.0

DRILLER S NAME Kraft DATE ENCOUNTERED 11-12-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE / MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-12-81 DATE BORING COMPLETED 11-12-81

ELEV	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Black to dark gray clayey top soil w/organics sharp	12/12	S-1		0 sample S-1 Taken from auger
		CL	Light yellowish brown stiff, low plasticity silty clay, highly jointed dry to slightly moist 4/-2.5Y Fluvial Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
					4.0		
	5	SP	Light yellowish brown loose, very fine sand moist no free water 6/4 - 2.5Y Fluvial	18/18	S-2	P	All samples in Plastic bags Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing not placed at this time because it was not available.
	10			12/18	S.3	P	Center plug of auger was not used from 15 to 30 feet.
					10.5		
			w/1-2% pea gravel from 14.0' downward				80 gal. water used as follows: 15-20 gal. 20-20 gal. 25-20 gal. 30-20 gal.
			Free water observed in sample S-4 at about the middle of sample		14.0		
	15			14/18	S-4	P	P.V.C. dropped about 1 ft. when augers were pulled up.
					15.5		Grout was hand mixed and poured into hole because we only had 6 ft. to grout
							Hole caved to 16'
					19.0		
	20			12/18	S-5	P	

20.5

PROJECT CAAP BORING G-9

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP BORING NO. G-9

DRILLING CONTRACTOR SWL FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft DATE ENCOUNTERED

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming medium to coarse w/1-2% pea gravel between 16 & 19 ft.		24.0	
	25			12/18	S-6	P
					25.5	
					29.0	
	30			No Sample	S-7	D
			T.O. 30.5		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP
BORING NO. G-10
DRILLING CONTRACTOR SWL
FIRST ENCOUNTERED WATER DEPTH 13.0
DRILLER S NAME Kraft
DATE ENCOUNTERED 11-8-81
GEOLOGIST NAME Sneed
GROUND ELEVATION
RIG MAKE / MODEL CME-55
GEOLOGIST S SIGNATURE
DATE BORING STARTED 11-8-81
DATE BORING COMPLETED 11-8-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
	0	OH	Black to dark gray clayey top soil w/ organic moist	2/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		~~SM~~ ML	Light yellowish brown loose clayey silt 10-15% clay Dry 6/4-2.5Y Fluvial				All samples taken W/split spoon
					4.0		
			Sharp				All samples in Plastic bags
	5		Light yellowish brown loose fine sand with 1-2% pea gravel	12/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
		SP	moist no free water Fluvial 6/4-2.5Y		5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing not set at this time because it was not available.
	10			12/18	S-3	P	P.V.C. dropped about 1 ft. when augers were pulled
					10.5		Center plug of augers not used from 15 to 30 ft.
			Free water encountered at 13.0 Free water observed in sample S-4				No water used.
							Grout hand mixed and poured into hole.
					14.0		Hole caved at 16.5 feet.
	15			6/18	S-4	P	
					15.5		
					19.0		
	20			12/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-10

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 13.0

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			12/18	S-6	D
					25.5	
					29.0	
	30				S-7	D
			T. D. 30.5		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G-10

BORING LOG

PROJECT CAAP

BORING NO. G-11

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 14-0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-13-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-13-81

DATE BORING COMPLETED 11-13-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown, clayey silty top soil with organic sharp	12/12	S-1		0 sample S-1 Taken from auger
		CL			1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
							All samples taken W/split spoon
					4.0		
							All samples in Plastic bags
	5		Very dark grayish brown silty, stiff low plasticity highly jointed moist clay. No free water 3/2-10Y Pluvial	18/18	S-2		Method of taking samples Pushed - P Driven w/ - D (40#hammer
				18/18	5.5	P	
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing not placed at this time because it was not available. Center plug of augers 15 to 30ft P.V.C. dropped about 1 ft. when auger were pulled. Grout was hand mixed and poured into hole because we only had 5.5 feet to grout.
	10	SP	Light yellowish brown very fine sand loose moist, no free water 6/4-2.5Y Pluvial	18/18	S-3		
					10.5		
					14.0		80 gals. water use as follows: 15-20 gals. 20-20-gals. 25-20-gals. 31-30-gals.
	15	SW	Becoming between 11 & 14 ft. A gray fine, loose sand w/1-2% pea gravel N5/-2.5Y Pluvial	18/18	S-4	P	
					15.5		Hole caved to 15 ft.
							Hole drilled with 11# O.D. & 6" I.D. Augers
					19.0		
	20			No sample	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-11

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Become medium to coarse in size between 16 to 19 ft.		24.0	
	25			No Sample	S-6	D
					25.5	
					29.0	
	30			12/18	S-7	
			T.D. 30.5'		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-11

BORING LOG

PROJECT CAAP
BORING NO. G-12
DRILLING CONTRACTOR SWL
FIRST ENCOUNTERED WATER DEPTH 14.0
DRILLER S NAME Kraft
DATE ENCOUNTERED 11-13-81
GEOLOGIST NAME Sneed
GROUND ELEVATION
RIG MAKE/ MODEL CME-55
GEOLOGIST S SIGNATURE
DATE BORING STARTED 11-13-81
DATE BORING COMPLETED 11-13-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown silty clayey top soil with organics	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Olive, silty, stiff moist, clay with iron stains, no free water 5/4-5Y Fluvial Low plasticity				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40# hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
		GP	Light yellowish brown fine, loose, sand with free water 6/4-2.5Y Fluvial				Protective casing not placed at this time because it was not available.
					9.0		
	10			18/18	S-3	P	Center plug of augers not used from 15 to 30 ft
					10.5		80 gal. water used as follows: 15-20 gal. 20-20 gal. 25-20 gal. 30-30 gal.
			Free water observed in sample S-3				P.V.C. dropped about 1 ft. when augers were pulled.
		SP			14.0		Grout was hand mixed and poured into hole because we only had ft. to grout
	15			12/18	S-4	P	
					15.5		Hole caved to 14.5 ft.
			Becoming a gray, loose fine sand, W/1-2" pea gravel between 16-19 ft.				
					19.0		
	20			18/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING No. G-12

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 14.0

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			18/18	S-6	D
					25.5	
			Sharp			
		CL			29.0	
	30		Dark gray silty, stiff, clay, 4/1-5Y Low plasticity Fluvial		S-7	D
					30.5	
			T.D. 30.5			
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					

40.5

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-13

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-14-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-14-81

DATE BORING COMPLETED 11-14-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark Brown, moist silty clayey top soil w/organics	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Light yellowish brown silty, low plasticity moist clay, 20-25% silt 6/4-2.5Y Fluvial No free water with a few very thin fine sand seams at one inch thick.				All samples taken W/split spoon
		CL			4.0		
	5			18/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (40#hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing not placed at this time because it was not available. P.V.C. dropped about one ft. where auger was pulled.
	10			18/18	S-3	P	
					10.5		Center plug of augers not used from 20 to 35 ft.
		SP	Light yellowish brown loose, find sand moist no free water 6/4-2.5Y Fluvial				80 gals. water used as follows: 20-20 gal. 25-20 gal. 30-20 gal. 35-20 gal.
					14.0		
	15		Free water encountered at 18.0 ft. cuttings from auger were very wet and free water from samples- 5 was observed.	12/18	S-4	P	Grout was hand mixed and poured into hole we only had to grout 10.0 ft.
					15.5		
			Sand becoming high gray in color at 18.0 ft. 6/1-5Y				Hole caved to 19.0 ft.
					19.0		
	20			12/18	S-5	P	
					20.5		

PROJECT CAAP BORING G-13

PROJECT CAAP

BORING NO. G-13

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		SW	Becoming fine to medium in size between 21 & 24 ft.		24.0	
	25			12/18	S-6	P
					25.5	
					29.0	
	30				S-7	
			T. D. 30.5 S		30.5	
					34.0	
	35				S-8	
					35.5	
					39.0	
	40					
					40.5	

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G-14

DRILLING CONTRACTOR SWL FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft DATE ENCOUNTERED 11-26-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-26-81 DATE BORING COMPLETED 11-26-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Black to dark brown clayey top soil w/ organics	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Olive, stiff, moist silty clay w/20% silt, no free water 5/4 - 5Y Fluvial				All samples taken W/split spoon
		CL			4.0		
				18/18			All samples in Plastic bags
	5				S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							Center plug of auger not used from 20 to 35 ft
					9.0		
			Sharp				50 gals. of water used to clean augers out at 35.5 ft.
	10			18/18	S.3	P	
			Light yellow, brown loose, silt, very fine sand, moist no free water 20% silt		0.5		P.V.C. dropped about ft. when augers were pulled.
		ML					
			6/4-2.5Y Fluvial Sharp		14.0		
	15		Light yellowish brown loose fine sand w/1-2% pea gravel moist, no free water 6/4-2.5Y Fluvial Free noted on bit and sample S-5	18/18	S-4	P	
		SP			15.5		
			Becoming fine to medium at 19 ft.		19.0		
	20		Free water encounted at 20.0 ft.	12/18	S-5	P	
					20.5		

PROJECT CAAP

BORING NO. G-14

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-26-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-26-81

DATE BORING COMPLETED 11-26-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		SP			24.0	
	25		Becoming gray in color at 25 feet N6/-2.5Y	18/18	S-6	D
					25.5	
					29.0	
	30		Becoming medium to coarse between 26 to 29 feet	18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	
			T.D. 35.5'		35.5	
					39.0	
	40					

40.5

PROJECT CAAP

DRILLING CONTRACTOR SWI.

DRILLER S NAME Kraft

GEOLOGIST NAME Sneed

RIG MAKE/ MODEL CME-55

DATE BORING STARTED 11-26-81

BORING NO. G-15

FIRST ENCOUNTERED WATER DEPTH 20'

DATE ENCOUNTERED 11-26-81

GROUND ELEVATION

GEOLOGIST S SIGNATURE

DATE BORING COMPLETED 11-26-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black to dark brown clayey top soil with organic	12/12	S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Olive stiff moist silty clay w/iron stain 25-30% silt, No Free water 5Y - 5Y Fluvial			All samples taken W/split spoon
		CL			4.0	All samples in Plastic bags
	5			18/18	S-2 P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0	Center plug and others not used from 20-35'
	10			18/18	S.3	
			Sharp		9.5	Used 30 gallon of water to advance auger as follows: 20 - 20 gal. 35 - 10 gal.
			Light yellowish brown loose very fine sand. Moist no free water 6/4-2.5Y Fluvial, with 1%-2% pea gravel Free water observed on bit at 20' becoming medium to coarse between 16-19'			P.V.C. dropped about 1' when augers pulled.
		SP			14.0	Hole caved to
	15			14-18	S-4 P	
					15.5	
					19.0	
	20			12/18	S-5 P	
					20.5	

PROJECT CAAP

BORING G-15

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING N. G-15

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 25

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-26-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-26-81

DATE BORING COMPLETED 11-26-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Becoming gray between 21-24' N6/2.5Y	18/18	S-6	D
					25.5	
					29.0	
	30			12/18	S-7	
					30.5	
					34.0	
	35			12/18	S-8	
			T.O. 35.5		35.5	
					39.0	
	40					
					40.5	

PROJECT CAAP

BORING G-15

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-16

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.5

DRILLER S NAME Kraft

DATE ENCOUNTERED 11/6-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-6-81

DATE BORING COMPLETED 11-6-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Black to dark gray clayey topsoil with organics	12/12	S-1		0 sample S-1 Taken from auger
					1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Sharp				All samples taken W/split spoon
		ML	Light yellowish brown loose clay silt moist with no free water				
			6/4-2.5Y		4.0		
			Fluvial orgin				All samples in Plastic bags
	5		10-15% clay	18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		Protective casing not placed at this time because it was not available.
	10			18/18	S-3	P	No water used
					0.5		Hole caved in at 19.5
			Sharp		14.0		
			Light yellowish brown with 1 to 2% pea gravel	18/18	S-4	P	
	15	SW	Moist no free water 6/4-2.5Y Fluvial origin		15.5		
			Free water encountered at 18.5 feet				
			Gradational		19.0		
	20			9/18	S-5	P	
					20.5		

PROJECT CAAP BORING G-16

PROJECT CAAP

BORING NO. G-16

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		SP	Light yellowish brown loose coarse sand w/1-2% pea gravel 10-15% fines with free water Fluvial orgin 6/4-2.5Y		24.0	
	25			9/18	S-6	P
					25.5	
					29.0	
	30			No Sample	S-7	D
					30.5	
					34.0	
	35			12/18	S-8	D
			TO 35.5		35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-16

BORING LOG

PROJECT CAAP

BORING NO. G-17

DRILLING CONTRACTOR SWI.

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-7-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-7-81

DATE BORING COMPLETED 11-7-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	%CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black to dark gray clayey top soil with organic, moist		S-1	0 sample S-1 Taken from auger
			Sharp		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In.
		ML	Light yellowish brown loose clayey silt 10-15% clay moist w/no free water 6/4 - 2.5Y			All samples taken W/split spoon
					4.0	All samples in Plastic bags
	5			6/18	S-2	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Sharp			
		SP	Light yellowish brown loose fine sand w/ 1 to 2% pea gravel. Moist no free water 6/4-2.5Y		9.0	
	10		Fluvial orgin	14/18	S-3	
					10.5	
			Grading fine in size to medium to coarse at about 18 ft.		14.0	
	15			12/18	S-4	
			Free water encountered at 18.0 feet.		15.5	
					19.0	
	20				S-5	
					20.5	

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-17

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			12/18	S-6	
					25.5	
					29.0	
	30			No Sample	S-7	
					30.5	
					34.0	
	35			5/12	S-8	
			T O 35.5		35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G-17

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G- 18

DRILLING CONTRACTOR SWL FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft DATE ENCOUNTERED 11-27-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-27-81 DATE BORING COMPLETED 11-27-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown clay w/organic top soil	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		ML SM	Light yellowish brown loose silty sand with 20% silt moist 6/4-2.5Y Airborn				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P. Driven w/ - D (40#hammer
			Sharp		5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
		CL	Light yellowish brown stiff, moist, silty clay no free water. 6/4-2.5Y Sharp				Center plug of auger is not used from 20-25
					9.0		No water used to advance auger
	10	SP	Light yellowish brown loose, moist, find sand 1%-2% pea gravel No free water 6/4-2.5Y	12/18	S-3	P	P.V.C. dropped about 1' when auger pulled
					10.5		Hole caved to 18'
					14.0		
	15		Free water observed on the bit at 20'	12/18	S-4		
					15.5		
					19.0		
	20		No sample from 19-20½		S-5	D	
					20.5		

PROJECT CAAP

BORING N. G-18

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-27-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-27-81

DATE BORING COMPLETED 11-27-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming medium to coarse between 23' - 24'			
					24.0	
	25			18/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
			No sample between 34-35½'		34.0	
					S-8	
	35		TD 35.5'		35.5	
					39.0	
	40					

40.5

BORING LOG

PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G- 19

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-27-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-27-81

DATE BORING COMPLETED 11-27-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		CL	Black-Dark brown clayey top soil	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
			Olive, stiff, moist silty clay 20-25% silt 5/6-5Y Fluvial				All samples taken W/split spoon
		CL			4.0		
	5			12/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (40#hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Light yellowish brown fine sand, moist no free water 1-2% pea gravel 6/4 - 2.5Y Fluvial				Center plug of auger not used from 20 to 35ft.
		SP			9.0		
	10			12/18	S.3	P	No water used to advance augers
					10.5		P.V.C dropped about 1 ft. when augers were pulled.
							Hole caved to 19 ft.
					14.0		
	15		Becoming coarse to medium between 16-19'	12/18	S-4	P	
					15.5		
					19.0		
	20			12/18	S-5	D	

20.5

PROJECT CAAP BORING G-

BORING LOG

PROJECT CAAP

BORING N. G-19

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-27-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-27-81

DATE BORING COMPLETED 11-27-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Free water observed on the bit at 20'		24.0	
	25			18/18	S-6	D
					25.5	
					29.0	
	30		Becoming grat at 30'	18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	D
			TD. 35.5		35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING NO. G-20

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-28-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-28-81

DATE BORING COMPLETED 11-28-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
	0	CL	Brown clay with some organic top soil	12/12	S-1		0 sample S-1 Taken from auger
					1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Olive silty clay with 20-25% silty moist with some iron stain 4/4-5Y				All samples taken W/split spoon
					4.0		
	5			18/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (140# hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							Center plug of auger not used from 20-35 ft.
					9.0		
	10			12/18	S-3	P	No water used to advance augers
					10.5		Hole caved at 19.0 ft.
			Light yellowish dark brown loose fine sand. Moist no free water 6/4-2.5Y				P.V.C. dropped about 1 ft. when augers were pulled.
					14.0		
	15	SP		10/18	S-4	P	
					15.5		
			Becoming medium to coarse with some pea gravel free water observed on the bit at 20'				
					19.0		
	20			8/18	S-5		
					20.5		

PROJECT CAAP

BORING G- 20

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-20

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-28-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-28-81

DATE BORING COMPLETED 11-28-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming olive silty at 23' 5/6-5Y			
		SM			24.0	
	25			18/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	D
			T.D. 35.5		35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G- 20

BORING LOG

PROJECT CAAP

BORING NO. G-21

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-28-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-28-81

DATE BORING COMPLETED 11-28-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		CL	Top soil in black to dark brown clay	12/12	S-1		0 sample S-1 Taken from auger
			sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		SP	Light yellowish loose moist fine sand 6/4-2.5Y No free water Fluvial				All samples taken W/split spoon
					4.0		
	5			18/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (140#hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Becoming medium to coarse with some pea gravel		9.0		P.V.C. dropped abou 1 ft when augers were pulled
	10			18/18	S.3	P	Hole caved at ft.
					0.5		
					14.0		
	15			12/18	S-4	P	
					15.5		
			Free water observed on the bit at 20' and on S-5		19.0		
	20			8/18	S-5	P	
					20.5		

PROJECT CAAP

BORING N. G-21

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-28-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-28-81

DATE BORING COMPLETED 11-28-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Center plug not used from 20' - 35' No water used to advance the auger	10/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35		T.D. 35.5	18/18	S-8	D
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING C-21

BORING LOG

PROJECT CAAP

BORING NO. G- 22

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-2-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-2-81

DATE BORING COMPLETED 12-2-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Top soil is black to dark brown clay with some organic Sharp	12-12	S-1		0 sample S-1 Taken from auger
			Dark brown yellowish fine sand w/20 -25% silty moist loose, It has some iron stain 6/4-2.5Y		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
							All samples taken W/split spoon
					4.0		
	5	SS		12/18	S-2	P	All samples in Plastic bags
							Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Sand encountered at 7'				No water used to advance augers
					9.0		P.V.C. dropped about 1ft. when augers were pulled.
	10			18/18	S.3	P	
					10.5		
			Fine light yellowish brown sand, moist loose				
					14.0		
	15			18/18	S-4	P	
					15.5		
			Becoming fine gray sand at 17' Free water observed on the bit at 20'				
					19.0		
	20			18/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-22

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-7-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-7-81

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming to medium to coarse with some pea gravel		24.0	
	25		Center plug is not used on Sample 6	18/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	D
			T.D. 35.5		35.5	
					39.0	
	40					

40.5

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-23

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-2-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-2-81

DATE BORING COMPLETED 12-2-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Black to dark brown clay with some organic Sharp	12/12	S-1		0 sample S-1 Taken from auger
		CL	Olive gray silty clay with 20-25% silt moist, stiff 5/2-5Y No fr-e water		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon 2"
					4.0		All samples in Plastic bags
	5			12/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
			Light yellowish brown fine sand loose moist 6/4-2.5Y Sand encountered at 7' No free water		5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		No water used to advance augers. P.V.C. dropped about 1 ft. when augers were pulled.
	10	SP		18/18	S-3	P	Hole caved to
					0.5		
					14.0		
	15			18/18	S-4	P	
					15.5		
			Free water observed on the bit at 20'		9.0		
	20			12/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-23

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-2-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-2-81

DATE BORING COMPLETED 12-2-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
			No sample between 24-25'	0/18	S-6	P
	25				25.5	
			Becoming medium to coarse with some pea gravel			
					29.0	
	30			12/18	S-7	D
					30.5	
					34.0	
	35			12/18	S-8	
			T.O. 35.5		35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-23

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G-24

DRILLING CONTRACTOR SWI. FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft DATE ENCOUNTERED 12-3-81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-3-81 DATE BORING COMPLETED 12-3-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Top soil black to dark brown clay, with some organic	12/12	S-1		0 sample S-1 Taken from auger
					1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		ML	Light yellowish brown fine sand. Moist loose 6/4-2.5Y				All samples taken W/split spoon
					4.0		
	5			12/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (40# hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Sharp Sand encountered at 8' depth				No water used to advance augers. P.V.C. dropped about 1 ft. when augers were pulled.
					9.0		
	10	SP		18/18	9.3	P	Hole caved to 12 ft.
					10.5		
			Becoming medium to coarse with some pea gravel at 15'		14.0		
	15			10/18	S-4	P	
					15.5		
					19.0		
	20		Free water observed on the bit at 20'	18/18	S-5	D	

20.5

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-24

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-3-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-3-81

DATE BORING COMPLETED 12-3-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Medium to coarse sand w/ some pea gravel	18/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35			12/18	S-8	D
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G-24

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-25

DRILLING CONTRACTOR SWI.

FIRST ENCOUNTERED WATER DEPTH 18'

DRILLER S NAME Kraft

DATE ENCOUNTERED 11-8-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 11-8-81

DATE BORING COMPLETED 11-8-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Grayish dark brown clayey top soil w/ organic	12/12	S-1		0 sample S-1 Taken from auger
		ML SM	Sharp Light yellowish brown loose clayey silt 10-15% clay moist, no free water 6/4'-2.5Y Fluvial		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
		SP	Sharp Light yellowish brown loose fine sand w/1 to 2% pea gravel Moist, no free water Fluvial 6/4-2.5Y		4.0		
	5			12/18	S-2	P	All samples in Plastic bags Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
			Grading from fine to medium in size between 5 and 10 ft.		9.0		P.V.C. droped about 1 ft. when augers were pulled.
	10			12/18	S.3	P	Center plug of auger not used from 20 to 35 ft.
			Grading from medium to coarse in size between 10 & 15 ft.		0.5		80 gal. of water used as follows: 20-20 gal. 25-20 gal. 30-20 gal. 35-20 gal.
					14.0		Hole caved at 19.5 feet
	15			12/18	S-4	P	
					15.5		
			Free water encountered at 18.0 Free water observed in sample S-5		19.0		
	20			6/18	S-5	P	

20.5

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING N. G-25

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			No Sample	S-6	D
					25.5	
					29.0	
	30			9/18	S-7	D
					30.5	
					34.0	
	35			9/18	S-8	D
			T.O. 35.5		35.5	
					39.0	
	40					

40.5

BORING LOG

PAGE 1 OF 2 PAGE

PROJECT CAAP

BORING NO. G-26

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 25.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-5-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-5-81

DATE BORING COMPLETED 12-5-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Brown clayey top soil w/ organics	12/12	S-1		0 sample S-1 Taken from auger
			Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	Grayish brown stiff low plasticity moist, sandy, silty clay No free water 5/2-2.5Y Fluvial				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40# hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							No water used.
					9.0		P.V.C. dropped about 1 ft. when augers were pulled.
	10				S.3		Hole caved at 21.0 ft.
					0.5		
			Sharp				
		SP	Light yellowish brown loose fine to medium moist sand. W-1-2% pea gravel 6/4-2.5Y No free water Vluvial		14.0		
	15			12/18	S-4	P	
					15.5		
					9.0		
	20			12/18	S-5		
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING No. G-26

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 25.0

DRILLER S NAME Kraft

DATE ENCOUNTERED

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Free water observed on bit at 25.0	No Sample	S-6	P
					25.5	
			Becoming light gray and medium to coarse between 26 and 29 ft.		29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	D
					35.5	
					39.0	
	40		TD 40.5		S-9	D

40.5

PROJECT CAAP BORING G-26

BORING LOG

PROJECT CAAP

BORING NO. G-27

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 13.5

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-6-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE / MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-6-81

DATE BORING COMPLETED 12-6-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown clayey top soil with organic Sharp	12/12	S-1		0 sample S-1 Taken from auger
		CL	Grayish brown stiff silty clay with iron stains, moist, no free water S/2-2.5Y Fluvial 25-30% silt		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							No water used. Center plug of augers not used from 25 to 40
					9.0		
	10			18/18	S-3	P	PVC dropped about 1 ft. when augers were pulled
					10.5		Hole caved at 23.0 ft.
					14.0		
	15		Sharp	18/18	S-4	P	
		SP	Light yellowish brown, loose moist find sand 6/4-2.5Y No free water Fluvial with a few thin (1"-4") light gray silt seams		15.5		
					19.0		
	20			9/18	S-5	P	

20.5

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-27

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 23/5

DRILLER S NAME Kraft

DATE ENCOUNTERED 12-6-81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12-6-81

DATE BORING COMPLETED 12-6-81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Becoming medium to coarse and light gray N6/-2.5Y	12/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35			18/18	S-8	D
					35.5	
					39.0	
	40		td 40.5	18/18		D

40.5

PROJECT CAAP BORING G-27

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G- 28

DRILLING CONTRACTOR SWI. FIRST ENCOUNTERED WATER DEPTH 21.8

DRILLER S NAME Kraft DATE ENCOUNTERED 12/7/81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE / MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/7/81 DATE BORING COMPLETED 12/7/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Dark brown to black top soil w/organics sharp	12/12	S-1		0 sample S-1 Taken from auger
			Grayish brown Stiff moist silt clay 25-30% silt		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
		CL	5/2 - 2.5 y Fluvial				All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							No water used
			Sharp		9.0		Center plug of augers not used from 25-40
		SP	Light yellow brown loose fine sand Moist (no face water)	12/12	S.3	P	
	10		6/4 - 2.5Y Fluvial w/1-2% pea gravel		0.5		PVC dropped about 1 foot when augers were pulled
					14.0		
	15			14/18	S-4	P	
					15.5		
					19.0		
	20			18/18	S-5	P	
					20.5		

BORING LOG

PROJECT CAAP

BORING N. G-28

DRILLING CONTRACTOR SWI.

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/7/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/7/81

DATE BORING COMPLETED 12/7/81

LEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming medium to coarse between 25 & 30 ft.		24.0	
	25			9/18	S-6	D
					25.5	
					29.0	
	30			9/18	S-7	D
			Becoming gray between 30 and 35 ft.		30.5	
					34.0	
	35			18/18	S-8	D
					35.5	
					39.0	
	40		TD 40.5'	18/18		D

40.5

BORING LOG

PROJECT CAAP

BORING NO. G- 29

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11/5/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED 11/5/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Grayish tan clayey top soil w/organics	12/12	S-1		0 sample S-1 Taken from auger
		CL	Silty stiff dark grayish brown low plastic clay, dry to damp no free water 4-2 - 10 yr Fluvial origin		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
					4.0		All samples in Plastic bags
	5		Sharp	3/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
		SW	Light gray fine loose sand w/1 to 2% pea gravel, moist No free water 7-2 - 2.5 y Fluvial origin		5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A.
					9.0		
	10		Coarsing downward to a medium size	12/18	S-3	P	
					10.5		
					14.0		
	15			12/18	S-4	P	
			Free water encountered at 18.0 ft.		15.5		
			Free water observed in sample S-5		19.0		
	20			12/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-29

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18.0

DRILLER S NAME Kraft

DATE ENCOUNTERED 11/5/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED

DATE BORING COMPLETED 11/5/81

LEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			NO SAMPLE	S-6	P & D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35		TD 35.5	NO SAMPLE	S-8	D
					35.5	
					39.0	
	40					

40.5

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G- 30

DRILLING CONTRACTOR SWI FIRST ENCOUNTERED WATER DEPTH 18

DRILLER S NAME Kraft DATE ENCOUNTERED 12/4/81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE / MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/4/81 DATE BORING COMPLETED 12/4/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Top soil is black to dark brown clay w/some organic	12/12	S-1		0 sample S-1 Taken from auger
		SP	Light yellowish brown fine loose moist sand. The top 6" of the sample is a gray clay w/silt No free water		1.0 4.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon All samples in Plastic bags
	5			18/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
			Sand encountered at 7' depth		5.5 9.0		Hole Drilled W/11" O.D & 6" I.D. H.S.A. No water used Hole caved to 14.5
	10			12/18	S-3	P	
			Becoming fine to medium at 15 ft. depth		10.5 14.0		
	15			12/18	S-4	P	
			Free water observed on the bit at 18 ft.		14.5 19.0		
	20			10/18	S-5	P	
					20.5		

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-30

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 18'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/4/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/4/81

DATE BORING COMPLETED 12/4/81

LEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
			Becoming medium to coarse w/some pea gravel			
					24.0	
			No sample between 24-25½ ft.	0/18	S-6	P
	25					
					25.5	
					29.0	
				18/18	S-7	D
	30					
					30.5	
					34.0	
				18/18	S-8	D
	35		TD 35.5			
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP

BORING G- 30

BORING LOG PAGE 1 OF 2 PAGE

PROJECT CAAP BORING NO. G- 31

DRILLING CONTRACTOR SWL FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft DATE ENCOUNTERED 12/4/81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE/ MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/4/81 DATE BORING COMPLETED 12/4/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
		OH	Black clayey top soil w/organics Sharp Moist	12/12	S-1		0 sample S-1 Taken from auger
		CL	Light yellowish brown stiff moist silty clay 6/4 - 2.5 yr No free water Fluvial Sharp		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
		SP	Light yellowish loose brown fine sand w/1-2% pea gravel Moist No free water 6/4 - 2.5 yr Fluvial		4.0		All samples in Plastic bags
	5			6/18	S-2	P	Method of taking samples Pushed - P Driven w/ - D (40#hammer
					5.5		Hole Drilled W/11" O.D & 6" I.D. H.S.A. No water used
					9.0		
	10			12/18	S-3	P	
					10.5		
					14.0		
	15			12/18	S-4	P	
					15.5		
					19.0		
	20			12/18	S-5	D	

20.5

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-31

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/4/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/4/81

DATE BORING COMPLETED 12/4/81

LEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25		Becoming medium to coarse between 21 & 23 ft.	18/18	S-6	D
					25.5	
					29.0	
	30			18/18	S-7	D
					30.5	
					34.0	
	35		TD 35.5	18/18	S-8	D
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G- 31

BORING LOG PAGE 1 OF 3 PAGE

PROJECT CAAP BORING NO. G- 32

DRILLING CONTRACTOR SWI. FIRST ENCOUNTERED WATER DEPTH 25'

DRILLER S NAME Kraft DATE ENCOUNTERED 12/7/81

GEOLOGIST NAME Sneed GROUND ELEVATION

RIG MAKE / MODEL CME-55 GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/7/81 DATE BORING COMPLETED 12/7/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
		OH	Black clayey top soil w/organics Sharp	12/12	S-1	0 sample S-1 Taken from auger
			Grayish brown stiff moist silty clay w/ 25-30% silt 5/2 - 2.5 y Fluvial		1.0	Measurement Depths - Ft. Samples - In. Recovery -In./In. All samples taken W/split spoon
		CL			4.0	All samples in Plastic bags
	5			18/18	S-2	P Method of taking samples Pushed - P Driven w/ - D (140#hammer
					5.5	Hole Drilled W/11" O.D & 6" I.D. H.S.A.
						No water used Center plug of auger not used
					9.0	
	10		Sharp	18/18	S.3	P PVC dropped about 1 ft. when augers were pulled
			Light yellowish brown loose moist fine sand w/ 1-2% pea gravel Fluvial		10.5	Hole caved at 29.0'
		SW			14.0	
	15			12/18	S-4	P
					15.5	
					19.0	
	20			12/18	S-5	D

20.5

BORING LOG PAGE 2 OF 3 PAGE

PROJECT CAAP

BORING NO. G-32

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 25'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/7/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/7/81

DATE BORING COMPLETED 12/7/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
				18/18	S-6	D
	25				25.5	
					29.0	
	30		Becoming fine to medium at 30 feet	18/18	S-7	D
					30.5	
					34.0	
	35		Becoming gray and medium to coarse at 35 feet	12/18	S-8	D
					35.5	
					39.0	
	40			18/18	S-9	D
					40.5	

BORING LOG PAGE 3 OF 3 PAGE

PROJECT CAAP

BORING NO G-32

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 25'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/7/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/7/81

DATE BORING COMPLETED 12/7/81

EV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
	45		TD 45.5	18/18	S-10	D

BORING LOG

PROJECT CAAP

BORING NO. G- 33

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/6/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/6/81

DATE BORING COMPLETED 12/6/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO		REMARKS
			Dark brown to black clayey top soil w/ organics Sharp	12/12	S-1		0 sample S-1 Taken from auger
		CL	Grayish brown stiff moist silty clay 5/2 - 2.5 y Fluvial		1.0		Measurement Depths - Ft. Samples - In. Recovery -In./In.
							All samples taken W/split spoon
			Sharp		4.0		
	5	SP	Light yellowish brown loose moist fine to medium sand w/1-5% pea gravel No free water Fluvial	12/18	S-2	P	All samples in Plastic bags
					5.5		Method of taking samples Pushed - P Driven w/ - D (40#hammer
							Hole Drilled W/11" O.D & 6" I.D. H.S.A.
							No water used
					9.0		Center plug of augers not used from 20 - 35
	10			18/18	S-3	P	PVC dropped about 1 ft. when augers were pulled
					10.5		
							Hole caved at 19.5 ft.
					14.0		
	15			18/18	S-4	P	
					15.5		
					19.0		
	20		Water observed on bit at 20 feet	18/18	S-5	D	

20.5

BORING LOG PAGE 2 OF 2 PAGE

PROJECT CAAP

BORING NO. G-33

DRILLING CONTRACTOR SWL

FIRST ENCOUNTERED WATER DEPTH 20'

DRILLER S NAME Kraft

DATE ENCOUNTERED 12/6/81

GEOLOGIST NAME Sneed

GROUND ELEVATION

RIG MAKE/ MODEL CME-55

GEOLOGIST S SIGNATURE

DATE BORING STARTED 12/6/81

DATE BORING COMPLETED 12/6/81

ELEV.	DEPTH	LEGEND	CLASSIFATION OF MATERIALS	% CORE RECOVERY	BOX OR SAMPLE NO	REMARKS
					24.0	
	25			18/18	S-6	
					25.5	
					29.0	
	30		Becoming medium to coarse at 30 feet	18/18	S-7	
					30.5	
					34.0	
	35		TD 35.5	18/18	S-8	
					35.5	
					39.0	
	40					

40.5

PROJECT CAAP BORING G- 33